

Pipette Accuracy Testers



**The pipette is not included.*

Are you sure your pipettes are still accurate?



AND ...Clearly a Better Value
A&D Company, Limited
<http://www.aandd.jp>

Simple tests save you great costs!

With a balance, software, and accessories all in one carrying case, A&D's pipette accuracy tester provides everything you need for easy verification of the accuracies of your pipettes.

* The pipette is not included.

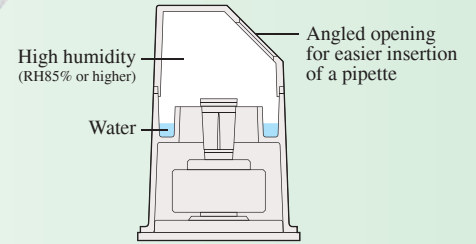


- Compliance with ISO8655 or any other specifications based on the “gravimetric method”* * See the last page
- Select from three models covering a wide volumetric range
- Easy test and data management using special WinCT-Pipette software
- Standard liquid thermometer and evaporation trap to ensure as precise measurements as possible
- Includes a calibration weight and tweezers for the balance

Pipette Accuracy Testers

Evaporation Trap

One of the difficulties in weighing a small quantity of liquid (e.g. 50 μL or less) is controlling the environment to minimize errors due to loss of evaporation. The evaporation trap maintains high humidity inside and prevents evaporation of the test liquid. It is no longer necessary to set up and adjust the humidity of an entire room.



* The evaporation trap can also function as a breeze break to shield the balance from air draft to ensure stable weighing.

Carrying Case

The pipette accuracy tester comes packed neatly in a portable carrying case, which is useful when performing on-site tests at distant places.



AD-4212B-PT/AD-4212A-PT



FX-300i-PT

WinCT-Pipette

Setting Specifications

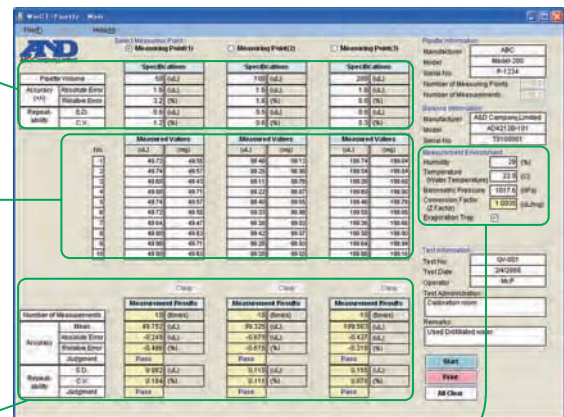
Enter the pipette volume and accuracy and repeatability specifications

Pipette Volume		Specifications	
Accuracy (+/-)	Absolute Error	50 (μL)	1.0 (μL)
	Relative Error		3.2 (%)
Repeatability	S.D.		0.6 (μL)
	C.V.		1.2 (%)

Measured Values

Displays the mass values transmitted from the balance and the volumetric values obtained using the Z (conversion) factor

Measured Values		
No.	(μL)	(mg)
1	49.72	49.55
2	49.74	49.57
3	49.60	49.43
4	49.88	49.71
5	49.74	49.57
6	49.72	49.55
7	49.84	49.47
8	49.80	49.63
9	49.88	49.71
10	49.80	49.63



Measurement Results

Displays the test results and judgment results

Number of Measurements		Measurement Results	
	Mean	49.752 (μL)	
Accuracy	Absolute Error	-0.248 (μL)	
	Relative Error	-0.496 (%)	
	Judgment	Pass	
Repeatability	S.D.	0.092 (μL)	
	C.V.	0.184 (%)	
	Judgment	Pass	

Measurement Environment	
Humidity	29 (%)
Temperature (Water Temperature)	22.9 (C)
Barometric Pressure	1017.6 (hPa)
Conversion Factor (Z Factor)	1.0035 ($\mu\text{L}/\text{mg}$)
Evaporation Trap	<input checked="" type="checkbox"/>

Testing Environment

Enter the distilled water temperature and the barometric pressure to determine the Z (conversion) factor

Printing Image

For recording purposes, test results can be output to a printer and printed in an A4 or letter-size report format.

Pipette Accuracy Test Results					
1. Pipette Information		2. System Information		3. Measurement Environment	
Manufacturer	ABC	Model	AD-4212B-PT	Humidity	29 (%)
Serial No.	12345	Manufacturer	ABC Company Limited	Temperature (Water Temperature)	22.9 (C)
		Model No.	AD-4212B-PT	Barometric Pressure	1017.6 (hPa)
		Serial No.	123456789	Conversion Factor (Z Factor)	1.0035 ($\mu\text{L}/\text{mg}$)
4. Specifications		5. Measured Values		6. Measurement Results	
Pipette Volume	50 (μL)	Measuring Point (1)	Measuring Point (2)	Measuring Point (3)	
Accuracy	Absolute Error	1.0 (μL)	1.0 (μL)	1.0 (μL)	
	Relative Error	2.0 (%)	2.0 (%)	2.0 (%)	
Repeatability	S.D.	0.6 (μL)	0.6 (μL)	0.6 (μL)	
	C.V.	1.2 (%)	1.2 (%)	1.2 (%)	
	Mean	49.752 (μL)	49.752 (μL)	49.752 (μL)	
	Absolute Error	-0.248 (μL)	-0.248 (μL)	-0.248 (μL)	
	Relative Error	-0.496 (%)	-0.496 (%)	-0.496 (%)	
	Judgment	Pass	Pass	Pass	
	S.D.	0.092 (μL)	0.092 (μL)	0.092 (μL)	
	C.V.	0.184 (%)	0.184 (%)	0.184 (%)	
	Judgment	Pass	Pass	Pass	
7. Test Information		Remarks: Used Distilled water			
Test No.	202305				
Test Date	2023/05				
Operator	SAI				
Test Administrator					

As a Training Kit...

It is a known fact that human factors often contribute more to erroneous measurements than the pipette accuracy itself. By visualizing the dispensed volumes and repeatability, pipette accuracy testers can be used as a good training tool for a novice to become a skilled pipette user.

Specifications

	AD-4212B-PT	AD-4212A-PT	FX-300i-PT
Weighing Capacity* ¹	110 g / 31 g / 5.1 g * ²	110 g	320 g
Minimum Weighing Value	0.1 mg / 0.01 mg / 0.001 mg	0.1 mg	1 mg
Linearity	±0.2 mg / ±0.05 mg / ±0.05 mg	±0.3 mg	±2 mg
Repeatability (Standard Deviation)	0.1 mg / 0.05 mg / 0.015 mg	0.15 mg	1 mg
Dimensions	Weighing unit : 80 (W) x 230 (D) x 200 (H) mm Display (with a stand) : 237 (W) x 150 (D) x 155 (H) mm		193 (W) x 262.5 (D) x 190 (H) mm
Standard Accessories * ³	<ul style="list-style-type: none"> • Instruction manual • Balance including the weighing pan unit, breeze break, AC adaptor and AC adaptor ID label • Calibration weight with a pair of tweezers • Evaporation trap • Sample cup with a holder (30 mL x 2 / 5 mL x 2) • Liquid thermometer • USB communications kit (USB converter, RS-232C cable, Instruction manual) • WinCT-Pipette (CD-ROM) • Carrying case with a shoulder belt and a key 		
AC Adaptor	Please confirm that the AC adaptor type is correct for your local voltage and power receptacle type.		
Power Consumption	Approx. 11VA (supplied to the AC adaptor)		
Carrying Case Dimensions	470 (W) x 150 (D) x 355 (H) mm		
Weight (With All Accessories in a Case)	Approx. 7.6 kg	Approx. 7.2 kg	Approx. 6.4 kg

*1 When the balance weighing pan is used.

*2 The AD-4212B-PT is equipped with a smart range function. The minimum weighing value will switch to 0.01 mg or 0.1 mg automatically when the mass value exceeds 5.1 g or 31 g respectively but can be reset to 0.001 mg by pressing the RE-ZERO (tare) key.

*3 The standard accessories for the AD-4212B-PT / AD-4212A-PT / FX-300i-PT are different from those for the AD-4212B / AD-4212A / FX-300i.

Pipette Specifications in accordance with ISO8655

Pipette Nominal Volume* ⁴	ISO8655 Requirements (Gravimetric Method)				
	Maximum Permissible Error				Balance Minimum Weighing Value
	Accuracy (Systematic Error)	Repeatability (Random Error)			
(μ L)	$\pm\%$	$\pm\mu$ L	%	μ L	mg
1	5.0	0.05	5	0.05	0.001
2	4.0	0.08	2	0.04	
5	2.5	0.125	1.5	0.075	
10	1.2	0.12	0.8	0.08	0.01
20	1.0	0.2	0.5	0.1	
50	1.0	0.5	0.4	0.2	
100	0.8	0.8	0.3	0.3	0.1
200	0.8	1.6	0.3	0.6	
500	0.8	4.0	0.3	1.5	
1000	0.8	8.0	0.3	3.0	1* ⁶
2000	0.8	16	0.3	6.0	
5000	0.8	40	0.3	15.0	
10000	0.6	60	0.3	30.0	
Daily inspection, simplified verification					

Corresponding Models *⁵

AD-4212B-PT

AD-4212A-PT

FX-300i-PT

*4 The maximum volume selectable for variable volume pipettes

*5 The AD-4212B-PT can be used for the pipette volume range from 1 μ L to 10000 μ L.

*6 The minimum weighing value, 1mg, corresponds to approximately 1 μ L. If a pipette volume is 1000 μ L, a test can be performed with a resolution of 0.1%. If 200 μ L, 0.5%.

Note) Make sure that the measurement environment is free from vibration, drafts and air from air conditioners.

Gravimetric Method

The gravimetric method is the most common way of knowing the performance of variable-volume pipettes, in which pipette volume is determined based on the mass value of distilled water dispensed from the pipette.

AND ...Clearly a Better Value

A&D Company, Limited

3-23-14 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-0013 JAPAN
Telephone:[81](3) 5391-6132 Fax:[81](3) 5391-6148
http://www.aandd.jp

A&D ENGINEERING, INC.

1756 Automation Parkway, San Jose, CA 95131 U.S.A.
Telephone:[1](408) 263-5333 Fax:[1](408) 263-0119

A&D Australasia Pty Ltd.

32 Dew Street, Thebarton, South Australia 5031 AUSTRALIA
Telephone:[61](8) 8301-8100 Fax:[61](8) 8352-7409

A&D INSTRUMENTS LTD.

Unit 24/26 Blacklands Way Abingdon Business Park,
Abingdon, Oxon OX14 1DY UNITED KINGDOM
Telephone:[44](1235) 550420 Fax:[44](1235) 550485

<German Sales Office>

Hamburger Straße 30 D-22926 Ahrensburg GERMANY
Telephone:[49](0) 4102 459230 Fax:[49](0) 4102 459231

A&D KOREA Limited

Manhattan Bldg. 8F, 36-2 Yoido-dong, Youngdeungpo-gu, Seoul, KOREA
Telephone:[82](2) 780-4101 Fax:[82](2) 782-4280

A&D RUS CO., LTD.

Vereyskaya str.17, Moscow, 121357 RUSSIA
Telephone: [7] (495) 937-33-44 Fax: [7] (495) 937-55-66

A&D Instruments India Private Limited

509 Udyog Vihar Phase V
Gurgaon-122 016, Haryana, INDIA
Telephone: [91](124) 471-5555 Fax: [91](124) 471-5599